ABSTRACT OF THE INVENTION

The present invention provides methods for isolating a defined quantity of DNA target material from other substances in a medium. The method may be carried out using a known quantity of a silica-containing solid support, such as silica magnetic particles, having a definable capacity for reversibly binding DNA target material, and DNA target material in excess of the binding capacity of the particles. The methods of the present invention involve forming a complex of the silica magnetic particles and the DNA target material in a mixture of the medium and particles, and separating the complex from the mixture using external magnetic force. The DNA target material may then be eluted from the complex. The quantity of DNA target material eluted may be determined based on a calibration model. The methods of the present invention permit isolation of DNA target material which is within a known quantity range. The methods of the invention eliminate the step of quantitating purified biological samples prior to further processing, such as amplification, Short Tandem Repeat (STR) analysis, and DNA sequencing. Samples of the DNA target materials may be obtained from liquid or solid media, such as liquid blood or paper.